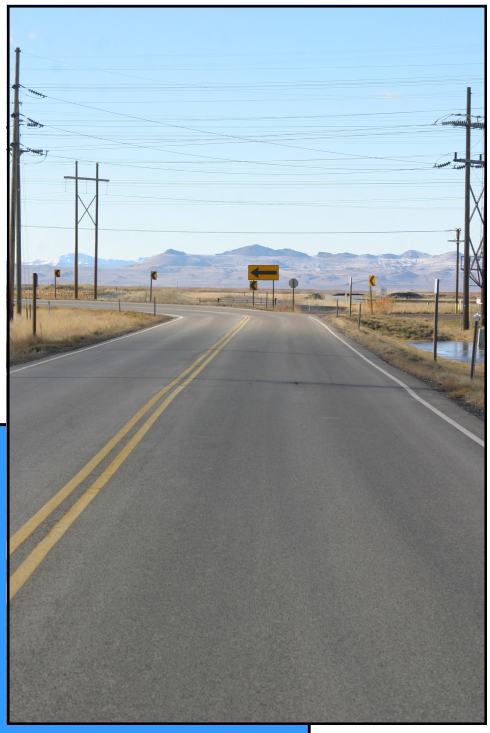
SR-68, 2600 South to I-15 in Davis County Existing Infrastructure & Geometric Conditions Report



November, 2005

SR-68, 2600 South to I-15 in Davis County
Project No. SP-STP-0068(21)68E

SR-68
2600 South
to I-15 in Davis County

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Introduction

This technical memorandum documents the existing infrastructure conditions, evaluation of geometric elements, and accident information for the SR-68/500 South corridor, from the intersection of 2600 South and Redwood Road to the southbound ramps west of I-15, in West Bountiful and Woods Cross, Utah. Refer to the project location in Figure 1. This section of SR-68 is considered an urban principal arterial and serves as a link between I-15, future commuter rail and the proposed Legacy Parkway. The Utah Department of Transportation (UDOT) right-of-way width is 100 feet from 2600 South on Redwood Road to 800 West on 500 South. Right-of-way along the corridor, from the intersection of 2600 South and Redwood Road to approximately the intersection of 800 West and 500 South, is 100 feet. From 800 West to I-15, the right-of-way width narrows to a total width of 66 feet. The following elements are detailed in this report:

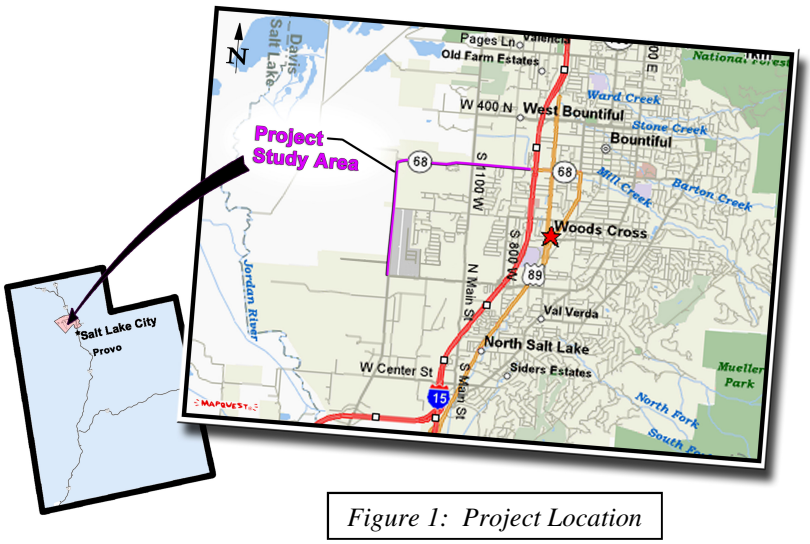


Figure 1: Project Location

Section 1.0 Geometrics
Section 2.0 Pavement
Section 3.0 Structures
Section 4.0 Drainage
Section 5.0 Irrigation/Canals
Section 6.0 Utilities
Section 7.0 Crash Data

Figures A1 to A12 in the Appendix provide a detailed layout of existing information including: curve speed, shoulder widths, clear zone issues, crash data and posted speed limits. Figures B1 to B12 show approximate locations of utilities along the corridor. Figures C1 to C4 provide design criteria and evaluations of the current roadway geometrics. Figures D1 to D12 show existing drainage features.

1.0 Geometrics

Roadway design standards from the Utah Department of Transportation (UDOT) and the American Association of State Highway Transportation Officials (AASHTO) were used to evaluate the existing roadway conditions. Roadway deficiencies are determined based on an evaluation of the existing conditions of the corridor compared to the design standards. The existing geometrics of SR-68 were determined using the *500 South Corridor Needs Assessment*, field reviews, survey data, aerial mapping and interviews with stakeholders. All of the gathered information was compared to the design criteria.

1.1 Critical Elements

Design standards used are based upon UDOT and Federal Highway Administration (FHWA) 12 critical design elements. These 12 elements include:

- Design Speed
- Lane Width
- Shoulder Width
- Horizontal Alignment
- Vertical Alignment
- Grades
- Stopping Sight Distance
- Cross Slopes
- Superelevation
- Structural Capacity
- Vertical Clearance
- Bridge Width

To obtain the roadway deficiencies, the existing conditions of the corridor were compared to these design elements. The deficiencies found are outlined below. Detailed layouts of existing deficiencies are shown in Figures A1-A12.

1.2 Design Speed

Design standards are based upon the design speed of the corridor. For this urban arterial, the recommended design speed can vary from 30-60 mph depending on the setting of the roadway. The setting or context of SR-68 has three sections, which are generally delineated by the posted speed limit of each section. These sections and their posted speed limits are:

- 2600 South to RP 67 (curve at Redwood Road and 500 South)– 55 mph
- RP 67 to 1100 West – 45 mph
- 1100 West to I-15 – 35 mph

The design speed is generally 5 mph greater than the posted speed limit. Design criteria is based on the design speed. The design criteria table developed for this cooridor is outlined in Figure C1. Inventory and analysis data tables are included in Figures C2 – C4. Deficient items (those that do not meet the design criteria) are in bold lettering.

45 mph speed zone & abrupt pavement taper after 1100 West

1.3 Analysis

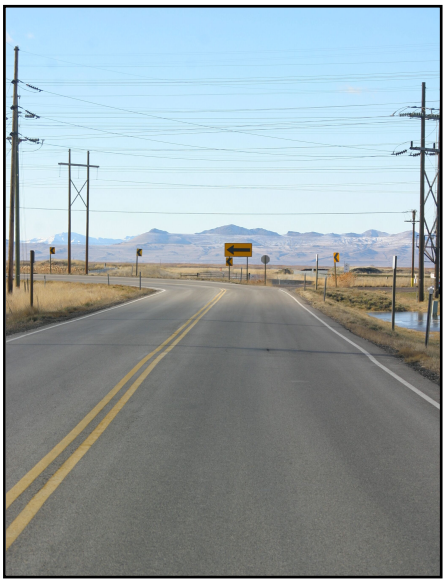
Deficiencies in roadway geometrics often contribute to poor traffic operations and crashes. Geometric elements that are closely associated to traffic operations and crashes are vertical alignment, horizontal alignment and cross sectional features.

The current roadway geometrics have not changed substantially since the road was constructed in 1953. Since its construction, minor roadway projects have brought many inconsistent element changes to the roadway. Minor maintenance projects are the only projects on record since the construction of the roadway.

1.4 Horizontal Alignment

The radius (or sharpness) of the curve, appropriate superelevation (amount of bank on the roadway), and proper sight distance (horizontal sightline offset) on horizontal curves are essential for safe maneuvering along horizontal alignments.

On this corridor, there are 14 horizontal curves. All but one of these curves are minor horizontal curves and are well within the design criteria for the corridor. There is one main existing horizontal curve (RP 67 – curve from Redwood Road to 500 South) that meets a design speed of 15 mph (radius of 500 feet, 3% max superelevation). Posted speed prior to this curve is 45 mph from each direction. As a result, this curve does not meet the criteria for the posted speed limit. An advisory speed limit sign of 30 mph is provided.



Looking West before the horizontal curve at 500 South & Redwood Road

The horizontal sightline offset distances provided for curves on the corridor are sufficient.

Intersection geometry at several intersections is deficient. Acceleration and deceleration lanes are inadequate. The following is a summary of the intersections with deficiencies:

- 2600 South & Redwood Road
- 2425 South & Redwood Road
- 1500 South & Redwood Road
- 1180 South & Redwood Road
- 1100 West & 500 South
- I-15 Southbound On-Ramp & 500 South

Table 1 contains a detailed analysis of deficient acceleration and deceleration lanes found on the corridor. Values in bold indicate a deficient length

Intersection	Design Speed	Acceleration				Deceleration			
		Speed Change Length		Taper Length		Speed Change Length		Taper Length	
		Provided	Req'd	Provided	Req'd	Provided	Req'd	Provided	Req'd
2600 South & Redwood Road	60 mph	**200 ft**	1200 ft	**285 ft**	300 ft	**360 ft**	500 ft	**0 ft**	180 ft
2425 South & Redwood Road	60 mph	**200 ft**	1200 ft	N/A	N/A	**300 ft**	500 ft	180 ft	180 ft
1500 South & Redwood Road	60 mph	**280 ft**	1200 ft	**180 ft**	300 ft	**380 ft**	500 ft	**160 ft**	180 ft
1180 South & Redwood Road	60 mph	**40 ft**	1200 ft	N/A	N/A	**280 ft**	500 ft	**130 ft**	180 ft
1100 West & 500 South *(West of Intersection)*	50 mph	**250 ft**	720 ft	**0 ft**	300 ft	**220 ft**	405 ft	**0 ft**	180 ft
1100 West & 500 South *(East of Intersection)*	40 mph	550 ft	360 ft	**0 ft**	300 ft	--	--	--	--
I-15 SB On-Ramp	25 mph	--	--	--	--	**None**	295 ft	N/A	N/A

*Table 1: Existing & Required Acceleration & Deceleration Lanes--**Bold numbers denote insufficient lane lengths***

in for the lane.

1.5 Vertical Alignment

Crashes on roadways are often attributed to inadequate sight distance. Sight distance is the length of the roadway ahead that is continuously visible to the driver and is an important concept of roadway design related to stopping, steering and overtaking. Stopping sight distance is the sufficient distance necessary to enable a vehicle traveling at the design speed to stop before reaching a stationary object in its path.

There are 10 vertical curves in the project area. All of these vertical curves meet current design standards. Existing grades on the corridor vary from 0.03% to 2.91%. The maximum recommended grade for this roadway to meet the design standards is 5% to 7%. The desired minimum grade for this corridor is 0.5%, however the absolute minimum for drainage is 0.3%. Flat grades can cause poor drainage of the roadway which in turn compromises safety and traffic operations. There are three grades along the study corridor that do not meet the minimum grade of 0.5%. Just south of 1500 South is a 0.03% grade, the middle of the curve at RP 67 has a -0.18% grade and just east of 1500 West is a 0.11% grade. For more information on the vertical alignment, refer to Figure C3.

1.6 Cross Section Elements

Cross section elements that contribute to the safety of the roadway include cross slope of the roadway, clear zone, sideslopes, lane widths and shoulder widths. The existing cross section of SR-68 has a variety of deficiencies, as shown in Figures A1 to A12 and Table 2. Table 2 outlines the current cross section features of the SR-68 study area.

The following is a summary of the existing cross section elements:

Traffic Lanes

The traffic lane width of a roadway greatly influences the safety and comfort of driving. Lane width also affects the roadway's level of service. Narrow lanes force drivers to operate their vehicles closer laterally to each other than they would normally desire. Lane widths of 12 feet are recommended on most arterials. The through lanes on this corridor are generally sufficient in

width (12 feet). However, there are areas along 500 South near I-15, where the lane widths are 11 feet.

Shoulders

A shoulder is the portion of the roadway contiguous with the traveled way that accommodates stopped vehicles, emergency use, and lateral support of roadway pavement. Shoulder width should be consistent throughout a corridor. In some cases, the shoulder can accommodate bicyclists. Shoulders can also serve as speed-change lanes for vehicles turning into driveways. Roadways with high truck traffic should have wider shoulders, however, wider shoulders can encourage unauthorized use of the shoulder as a travel lane or on-street parking.

This corridor has a recommended shoulder width of 8 feet. The percentage of trucks on the corridor is 7-8%. The existing shoulders range from 0-30 feet wide. Most of the corridor (from 2600 South to 800 West) has a deficient shoulder of 1 foot. Areas where the shoulders are 27-30 feet wide are sections of relatively new development where a right-of-way setback was required. The shoulder width in these areas, near 1100 West and 700 West, encourages on-street parking. See Figures A1 to A12 for locations of inconsistent shoulder widths.

Clear Zone

Clear zone is the area adjacent to the travel way that is clear of obstructions that could impede the safe recovery of a vehicle that has left the traveled way. Obstructions that can not be removed from the clear zone are shielded with safety devices known as end treatments, which protect the motorist from more serious injury/damage that may occur if the vehicle were to hit the obstruction.

Clear roadside design is recommended for urban arterials whenever practical. Clear zone area is dependant on the context of the roadway cross section and the design speed of the corridor. The context of this corridor is delineated by sections with and without curb and gutter. In sections without curb and gutter, the width of the clear zone area is dependant on the design speed. From 2600 South to RP 67 the minimum clear zone is 30 feet. From RP 67 to 1100 West the minimum clear zone is 16 feet.

The section of the corridor from 1100 West to I-15 generally has curb and gutter. In this section, the clear roadsides described above are often impractical. In such areas, a minimum offset of 1.5 feet between curb face and object is recommended.

There are many clear zone hazards throughout the corridor. Obstructions include power poles on the east side of Redwood Road and the south side of

Corridor Sections	Design Speed	Traffic Lane Width	Shoulder Width	Sideslope	Cross Slope	Clear Zone
	mph	**Feet**	**Feet**	**Feet : Feet**	**%**	**Feet**
Recommended Values	--	12	8	4:1 or flatter	2	SECTION 1: 30 SECTION 2: 18 SECTION 3: 3
SECTION 1: 2600 South Redwood Road to RP 67	60	12	1	Varies (See Figures A1-A12)	0.2 - 3.6 (See Figure A-5)	Varies
SECTION 2: RP 67 to 1100 West and 500 South	50	12	Varies 1 – 30	Varies (See Figures A1-A12)	2	Obstructions (See Figures A1-A12)
SECTION 3: 1100 West and 500 South to I-15	40	11—12	Varies 1 – 30	6:1 or flat-ter	1.5—2.0	Obstructions (See Figures A1-A12)

Table 2: Existing Cross Section Elements

500 South, drainage ditches, mailboxes and signs, inadequate protection of railroad apparatus at the Denver & Rio Grande Western Railroad (D&RGW) crossing, and roadside ditches. See Figures A1 to A12 for specific areas of clear zone deficiencies.

Inconsistent shoulder widths & curb & gutter near 800 West

Sideslopes

Sideslope is the area from the paved shoulder to the outer edge of the clear zones. Sideslope is important to ensure roadway stability and to provide a reasonable opportunity for recovery for an out-of-control vehicle. Critical to this area is the foreslope (area from the edge of roadway surface and the toe of the slope) and the backslope (area from the toe of the slope and back slope that forms a ditch). Generally the minimum side slope should be 4:1. If a roadside ditch is formed, then the ditch should generally be a 6:1 with a 3:1 foreslope/backslope combination. Figures A1 to A12 identify locations with green hatch marks where sideslopes within the clear zone are steeper than 4:1. Existing deficiencies of the roadside sideslopes vary throughout the corridor, however, most of the deficiencies occur in the section from 2600 South to 1100 West due to drainage ditches with steep sideslopes.

Cross Slope

Sufficient cross slope for adequate pavement drainage is important on arterials. Typical problems related to splashing and hydroplaning are compounded by heavy traffic volumes and curbed sections, especially for high speeds. The existing cross slope for the SR-68 corridor ranges from 1.5% - 3.0%. This is an acceptable range for cross slopes.

Sidewalks

Deficiencies in pedestrian facilities include sidewalk gaps, lack of handicap ramps and inadequate layout and slope requirements per the ADA Accessibility Guidelines for Buildings and Facilities Standards. Although cycling groups use the corridor regularly, the entire corridor does not have any designated bike lanes or equestrian trails.

From 1100 West to I-15, the edge of roadway is defined by curb and gutter. Pedestrian use along the corridor is desirable by the community; however, there are few intermittent sidewalks found mostly between 1100 West and I-15. Both Woods Cross and West Bountiful City Master Plans have outlined plans for bike paths and equestrian trails in addition to sidewalks and have identified the corridor as a bicycle tour route. Interviews with residents and businesses along the corridor have also indicated need for consistent sidewalks along the SR-68 corridor.

Sidewalk & stamped concrete park strip near the UPRR crossing

1.7 Right-of-Way

Right-of-way along the corridor, from the intersection of 2600 South and Redwood Road to approximately the intersection of 800 West and 500 South, is 100 feet. From 800 West to I-15, the right-of-way width narrows to a total width of 66 feet.

2.0 Pavement

Pavement conditions within the study area appear to be fair to poor. UDOT performed a Visual Distress Survey on the pavement for the 500 South portion of the project in 2001. A visual inspection showed rutting near the UPRR crossing and extensive transverse and longitudinal cracks throughout most of the project area with a marginal skid resistance index. There are a few asphalt patches, which are most likely from utility work in the area. The pavement is near the end of its life cycle and is expected to fail within the next 10 years.

3.0 Structures

There is a minor structure in the study area. This is the box culvert that carries Mill Creek. The box is a complex double-barrel box culvert (one is 10' x 4' and the other is 8' x 4') and is approximately 550 feet long. The culverts begin together on the south side of 500 South and west of the I-15 southbound ramps at the detention basin. The boxes split with the 8' x 4' box running along the south side of 500 South and angling north at 700 West. The 10' x 4' box runs under 500 South and turns west on the north side of 500 South, paralleling the 8' x 4' box. The boxes join together 200 feet north of 500 South at 700 West. These structures are not considered major by UDOT and therefore do not have structure ratings. Visual inspections show that the boxes are in good condition and do not show major damage or structural problems.

Box culverts carrying Mill Creek under 500 South

4.0 Drainage

The existing drainage system for the SR-68 corridor is inconsistent. Between I-15 and the D&RGW railroad, concrete curb and gutter carries runoff to the storm drain catch basins. There is intermittent curb and gutter west of the D&RGW railroad. At the ends of the curb and gutter sections, runoff is allowed to drain to the roadside swales. Erosion has occurred at these locations and has undermined the curb sections. On the north side of 500 South, the storm drain system consists of open ditches, reinforced concrete pipes and corrugated metal pipes. These pipes range in size from 18 to 48 inches. See figures D1 to D12 for pipe locations and sizes. At 1100 West, a 48-inch culvert drains into an open ditch. This open ditch discharges into the A1-A canal. The south side of 500 South has a mix of open ditches and 18-inch concrete pipes. This system also drains into the A1-A canal.

Pond at 1650 West fed by an artesian well

The 48-inch pipe is adequate for the drainage area, however, some portions of the original drainage system installed in the 1950's are still being utilized. As development has taken place along the corridor, some improvements have been made to the system, but the entire system has never been replaced. The existing metal pipe along the corridor will most likely not meet the 50-year design life.

Along Redwood Road, there are no storm drain pipes except for a few cross drain pipes. See Figure D1 to Figure D12 for these locations. The existing storm drain system includes roadside swales and open ditches. The extremely flat grade along the roadway actually allows the roadside ditches to act as linear detention ponds as the storm water collects and slowly drains to the north. This ponding can be observed just north of the airport. This water allows for vegetation to grow and encroaches on the clear zone area.

Sheet flow runoff from the Utah Auto Auction parking lot found on the north side of 500 South, just east of the curve, runs into the roadside ditches fronting the property. Also, an existing pond, just east of the parking lot, is fed by an artesian well, but collects no storm water.

A manhole, just west of the DR&GW rail crossing, overflows during high intensity storms. The manhole is full of mud and needs to be maintained. Many pipes in the area have been partially filled with silt. Maintenance crews have not found a blockage in the pipe to date.

5.0 Irrigation/Canals

Drainage along 500 South and Redwood Road is presently at a poor level. Although Bountiful City has no master plan, the drainage system and its maintenance is a high priority. The A1-A drain is a major drainage feature that crosses 500 south with a corrugated metal pipe culvert that stretches from right-of-way to right-of-way. From a letter dated February 3, 1999, the United States Department of the Interior made

the comment: "...the design capacity of the A1-A drain is currently exceeded by unauthorized urban use of the drain, which is limiting our ability to properly drain agricultural lands."

The Mill Creek box culvert was upgraded a few years ago and at that time the existing box was abandoned and the creek was diverted to the north in a concrete lined channel. The abandoned culvert is still being used for roadway runoff. This culvert is not maintained and is filling up with silt and debris. Davis County would like to abandon the existing debris basin near 500 south and I-15. There are future plans to eliminate the basin and tie the box culvert under I-15 to the 500 South box culvert crossing.

6.0 Utilities

There is a variety of utilities that run along the SR-68/500 South corridor, including natural gas, culinary water, sanitary sewer, overhead power, overhead telecommunications, fiber optics, storm drain and petroleum pipe lines that serve the refineries in the area. There are several providers along the corridor for gas, water, irrigation and storm drainage. There are also two railroad crossings on the corridor. The utility lines run throughout the entire corridor. See Figures B1 to B12 for approximate utility locations.

Overhead power lines along 500 South

Questar Gas has a 6-inch high pressure gas line on the south side of the project that runs the length of the project corridor. There is a 2- to 4-inch steel line that runs parallel to the 6-inch line from 1150 West to Redwood Road. There is a 4-inch steel-wrapped line that runs in the center of 500 South from I-15 to 1100 west.

Chevron Gas has two gas lines along 500 South. There is an 8-inch gasoline line that runs north and south along 1100 West and crosses 500 South. North of 500 South, there is an 8-inch diesel line, that runs parallel to the 8-inch gasoline line but turns and runs under 500 South to the Auto Auction where it turns south.

Holly Refinery has five lines in 10- and 12-inch ducts that cross 500 South at 800 West. The pipes range from 6 to 8 inches.

Utah Power has a substation located at the southwest corner of 500 South and the UPRR tracks. The power substation is located in a depression and Utah Power has expressed an interest in raising the substation grade. Utah Power has overhead distribution and transmission lines that run along the south side of 500 South. There is also a power line that runs parallel to the Union Pacific Railroad and crosses 500 south at 800 West.

Qwest has a main duct that is located along the south side of 500 South. On the north side, Level 3 Communications has three fiber optic ducts and three separate buried feeder cables of 600 and 900 pairs.

Water

Woods Cross and West Bountiful cities manage separate distribution loops and trunk lines for water distribution and fire protection along the 500 South corridor. There are numerous fire hydrants and water valves located within the right-of-way. These existing fire hydrants are in excellent condition.

West Bountiful has an existing 6- to 8-inch water line eight feet north of the existing edge of pavement. The city has plans to abandon the existing water line and install a new 12-inch water line.

Sewer

The sewer lines in the project corridor are under the jurisdiction of the South Davis County Sewer Improvement District. There is an 8-inch sewer line located on the north side of 500 South that runs from 1100 West to Redwood Road, a 12-inch line from 1100 West to 800 West, and a 10-inch line from 800 West to I-15. There are several major lines that tie into 500 South. They include: 21-inch line at 100 West; 10-inch line at 1320 West, just west of the Westwood Mobile Home

Community; and an 18-to 24-inch line that runs along Redwood Road and connects into the 10-inch line at 500 South.

7.0 Crash Data

The UDOT Traffic and Safety Division generated a 3-year crash history for the project corridor from 2001 to 2003. The crash history results are summarized below. The actual severity and crash rate have been calculated for this segment of SR-68 from reported/documented crashes over the three year study period. Typically, the actual rates are compared to the expected rate to provide a relative measure of how safe a road might be presently operating. In order to derive an expected rate, UDOT calculates severity and crash rates for similar types of facilities within the state and averages them to produce these rates. On a facility similar to SR-68 across the entire state of Utah, the average expected severity rate was 1.70 and the average crash rate was 3.96. See Table 3 below for more detailed crash severity information.

The expected crash rate is based on the state wide expected severity and number of accidents for a certain classification of roadway. SR-68 is classified as an urban arterial. As shown below, there is a lower occurrence of accidents and severity than would be expected for this classification of roadway. Refer to Tables 4 and 5 below and Figures A1 to A12 for detailed information of crash types. As shown in Tables 4 and 5, a high occurrence of rear-end and right angle collisions have occurred. These types of crashes suggest inadequate auxiliary lanes (right and left turn lanes, medians, and shoulders), or high travel speeds for roadway conditions. A review of these crashes and locations are shown in Figures A1-A12.

Actual & Expected Crash Rates for Utah's Urban Principal Arterials

URBAN PRINCIPAL ARTERIAL	ACTUAL				EXPECTED
	'01	'02	'03	TOTAL/ AVE.	
Number of Crashes	21	26	27	74/24.7	
Crash Rate	2.92	2.43	2.52	2.62	3.96
Severity	1.48	1.77	1.52	1.59	1.70

Table 3: Crash History & Actual Crash Rates v. Expected Rates

SR-68 CRASH RATES (2001 to 2003)

TYPE OF CRASH	PERCENT OF TOTAL	TOTAL NUMBER
Rear End Crash	33.8%	25
Right Angle Crash	25.7%	19
Single Vehicle Crash	14.9%	11
Left Turn Crash	13.5%	10

Table 4: Types of Crashes v. the Total Number of Crashes

SR-68 CRASH LOCATIONS SUMMARY

INTERSECTION	
CRASH TYPE	NUMBER
1100 West & 500 South	
Right Angle	8
Rear End	3
800 West & 500 South	
Right Angle	4
I-15 Southbound Ramps	
Left Turn	9
Rear End	6
Right Angle	4

Table 5: Locations with highest number of crashes

Appendix

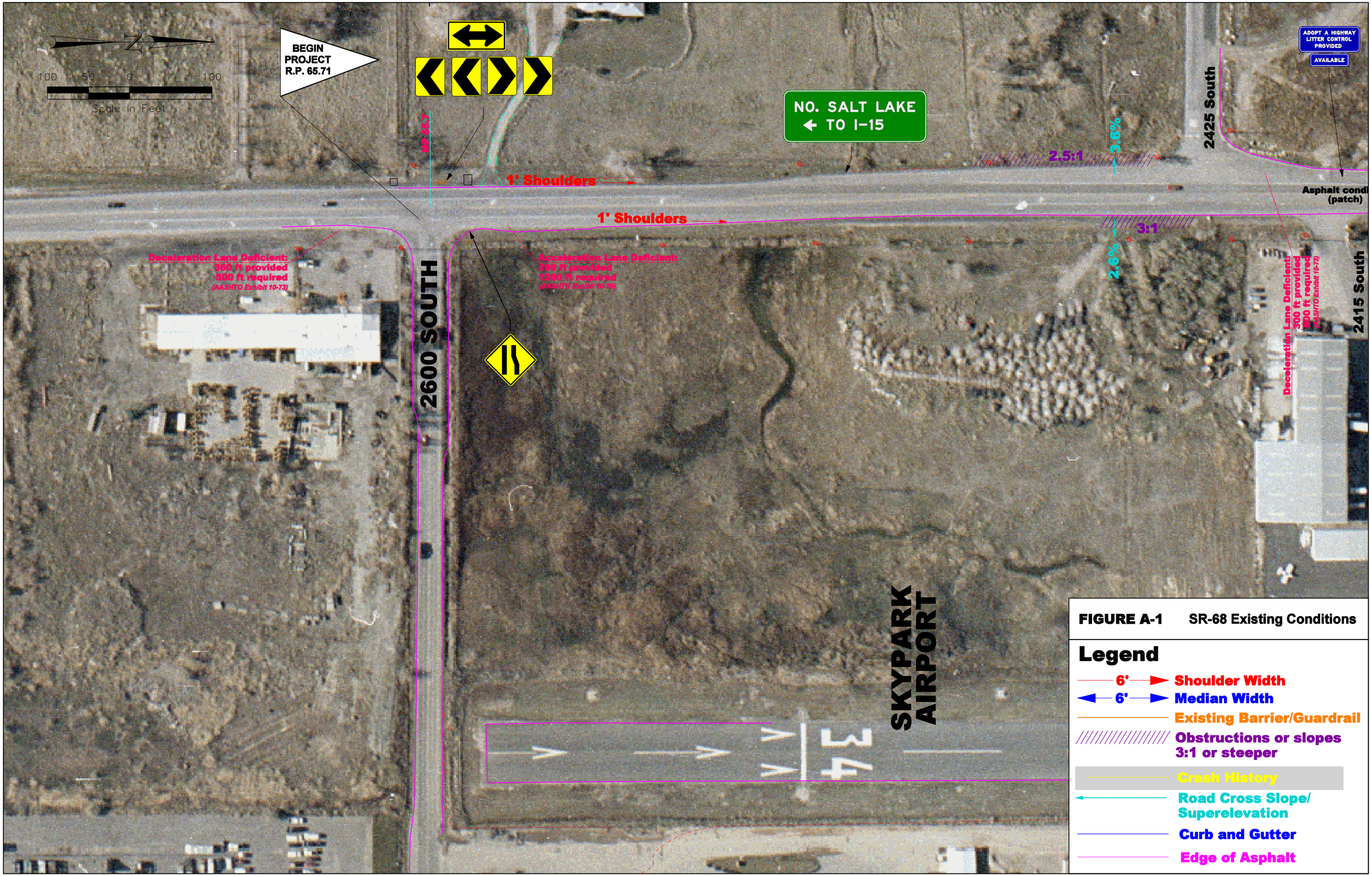


FIGURE A-1 SR-68 Existing Conditions

Legend

- 6' Shoulder Width
- 6' Median Width
- Existing Barrier/Guardrail
- Obstructions or slopes 3:1 or steeper
- Crash History
- Road Cross Slope/ Superelevation
- Curb and Gutter
- Edge of Asphalt

ADOPT A HIGHWAY LITTER CONTROL PROVIDED
AVAILABLE

CRASH – TWO VEHICLES
Improper Backing

CRASH – TWO VEHICLES
Overturned, Brakes Defective;
Collided with a Fence
and Utility Pole

CRASH – SINGLE VEHICLE
Ran Off Roadway
Driver III
Collided with Fence

CRASH – TWO VEHICLES
Right Angle Collision
Failed to Yield Right-of-Way

100 50 0 100
Scale In Feet

2425 South

MAILBOX

2.5:1 1' Shoulders 3:1

Asphalt condition (patch)

SR-68 (REDWOOD ROAD)

Asphalt condition (patch)
Longitudinal cracking along centerline

3:1 1' Shoulders 2:1 2:1 3:1

MILE 67

Deceleration Lane Deficient
300 ft provided
500 ft required
(AASHTO Exhibit 10-73)

2415 South

MAILBOX

2255 South

2125 South

SKYPARK AIRPORT

FIGURE A-2 SR-68 Existing Conditions

Legend

- 6' Shoulder Width
- 6' Median Width
- Existing Barrier/Guardrail
- Obstructions or slopes 3:1 or steeper
- Crash History
- Road Cross Slope/ Superelevation
- Curb and Gutter
- Edge of Asphalt

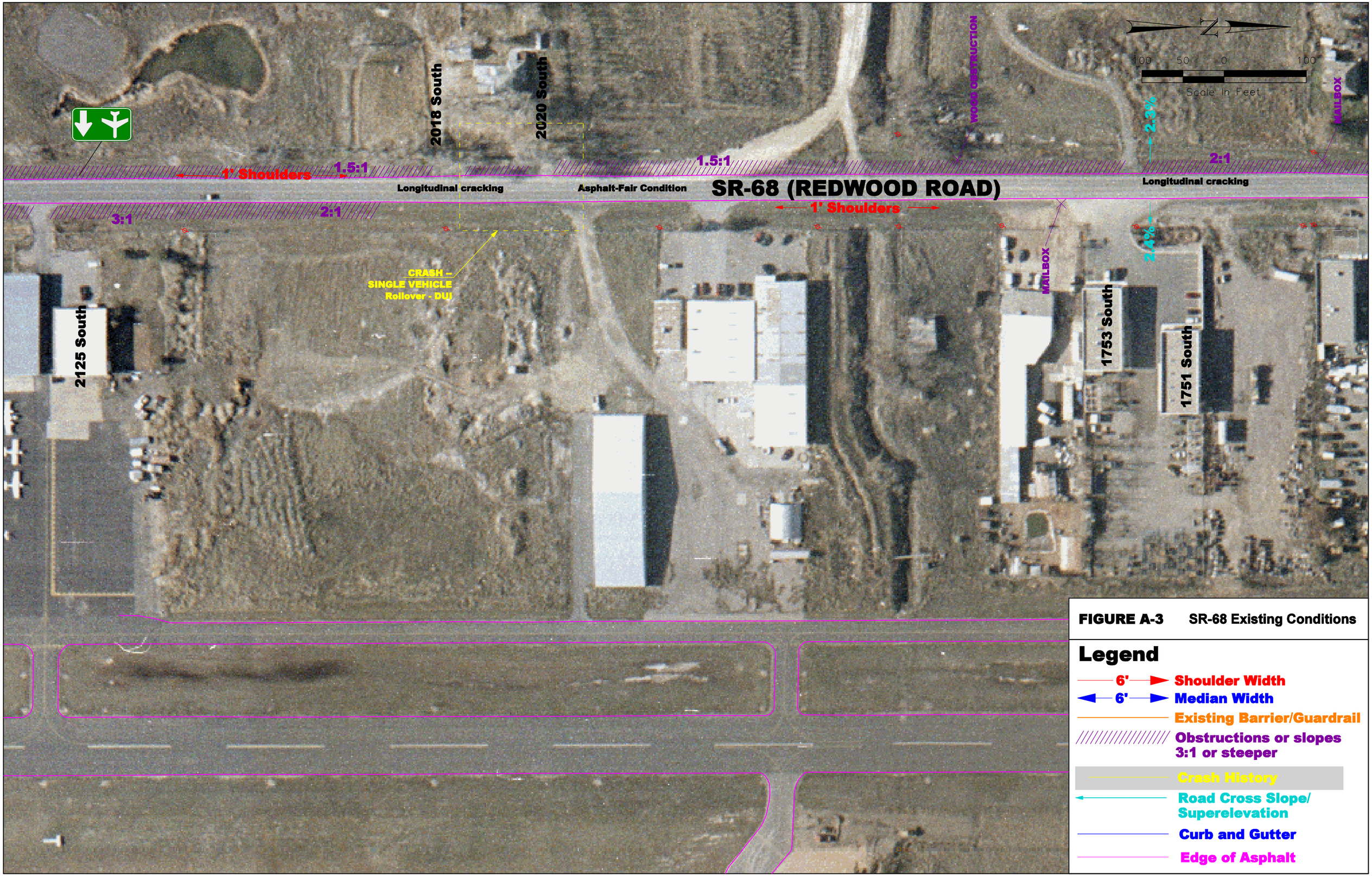


FIGURE A-3 SR-68 Existing Conditions

Legend

- 6' Shoulder Width
- 6' Median Width
- Existing Barrier/Guardrail
- Obstructions or slopes 3:1 or steeper
- Crash History
- Road Cross Slope/ Superelevation
- Curb and Gutter
- Edge of Asphalt

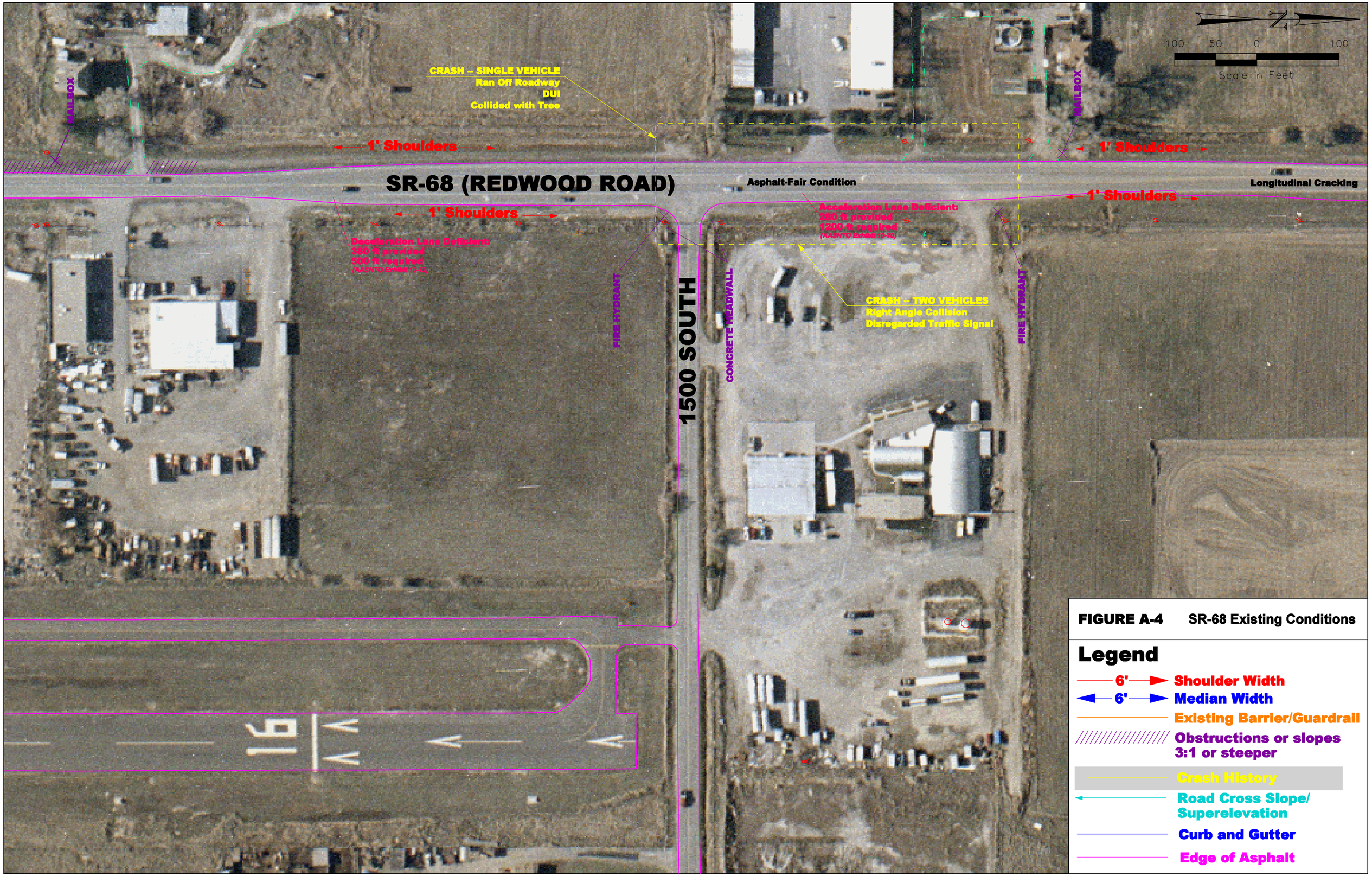


FIGURE A-4 SR-68 Existing Conditions

Legend

- 6' Shoulder Width
- 6' Median Width
- Existing Barrier/Guardrail
- Obstructions or slopes 3:1 or steeper
- Crash History
- Road Cross Slope/ Superelevation
- Curb and Gutter
- Edge of Asphalt

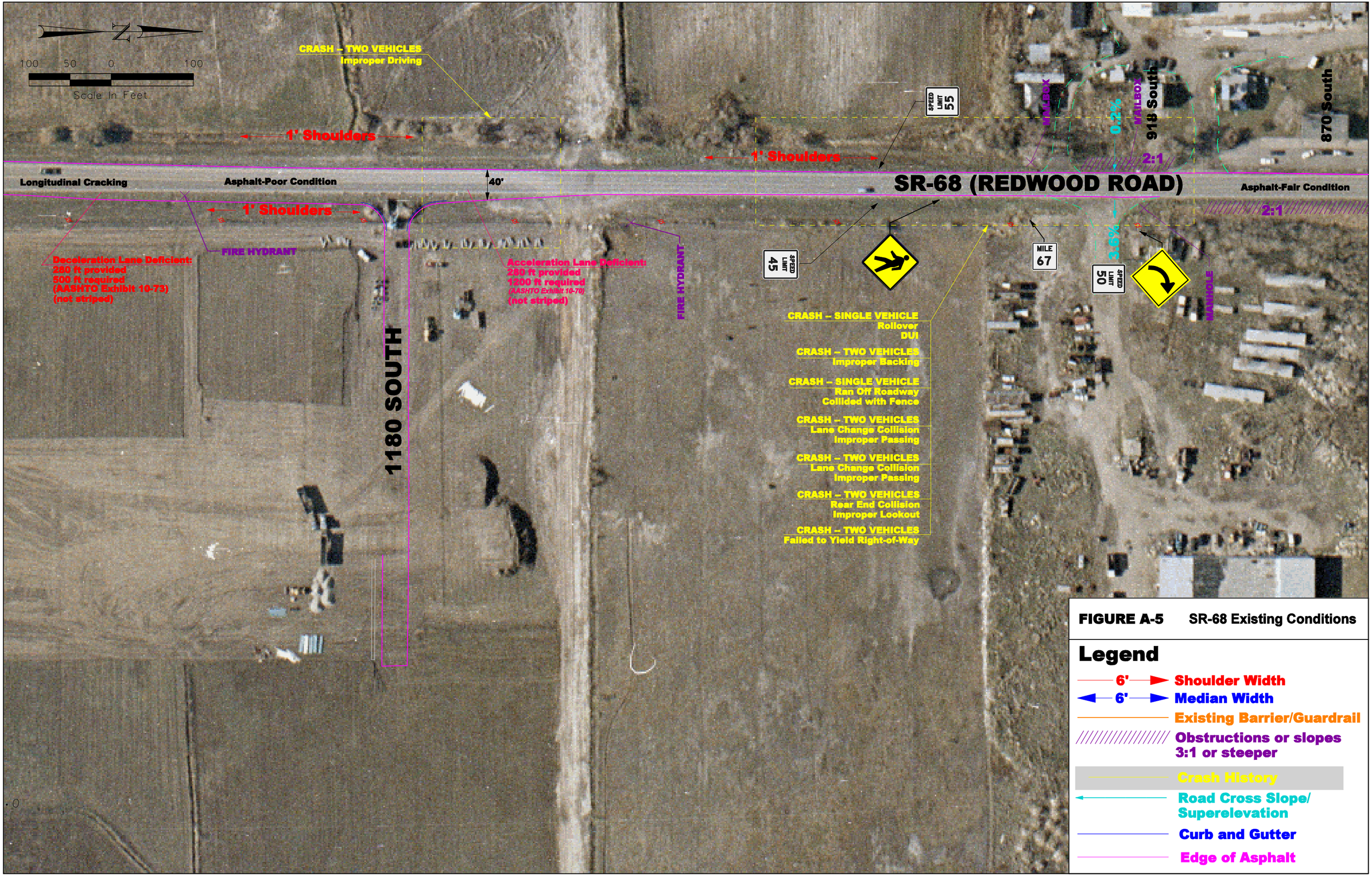


FIGURE A-5 SR-68 Existing Conditions

Legend

- 6' Shoulder Width
- 6' Median Width
- Existing Barrier/Guardrail
- Obstructions or slopes 3:1 or steeper
- Crash History
- Road Cross Slope/ Superelevation
- Curb and Gutter
- Edge of Asphalt

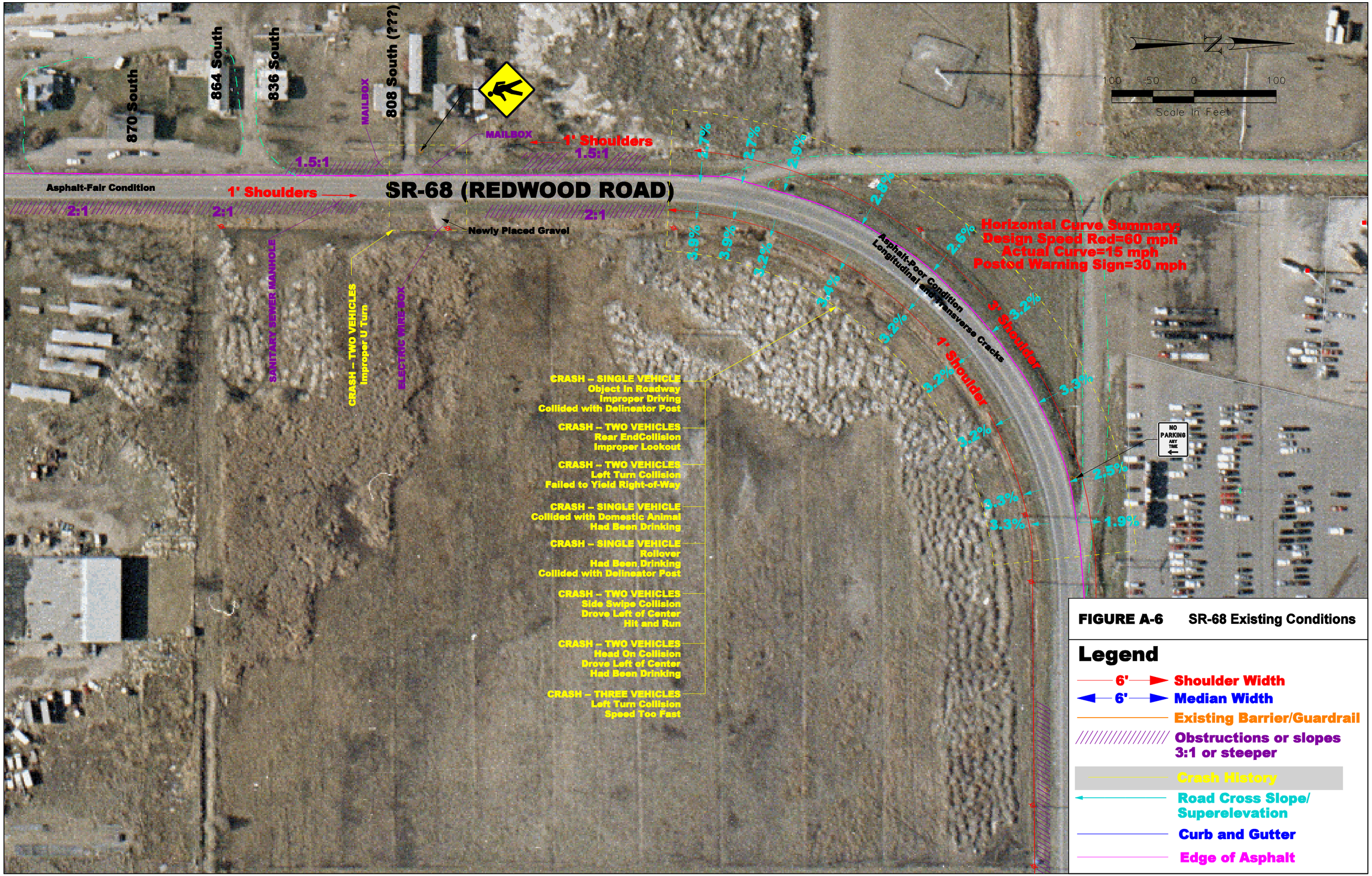


FIGURE A-6 SR-68 Existing Conditions

Legend

- 6' Shoulder Width
- 6' Median Width
- Existing Barrier/Guardrail
- Obstructions or slopes 3:1 or steeper
- Crash History
- Road Cross Slope/ Superelevation
- Curb and Gutter
- Edge of Asphalt

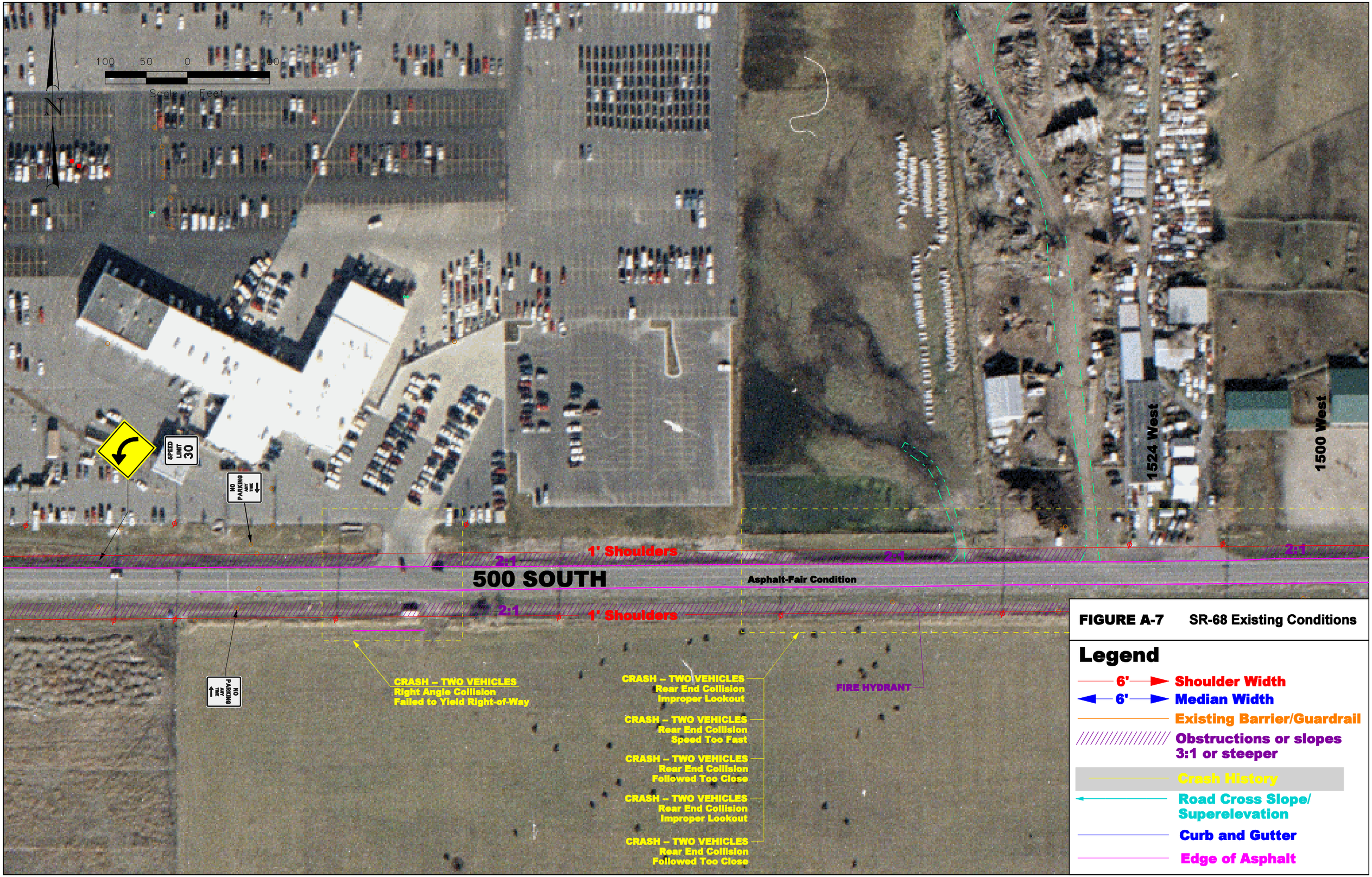


FIGURE A-7 SR-68 Existing Conditions

Legend

- 6' Shoulder Width
- 6' Median Width
- Existing Barrier/Guardrail
- Obstructions or slopes 3:1 or steeper
- Crash History
- Road Cross Slope/ Superelevation
- Curb and Gutter
- Edge of Asphalt

100 50 0 100

Scale In Feet

N

1500 West

1201 West

CRASH – SINGLE VEHICLE
Ran Off Road
Rollover

GATE

NO PROTECTION
AROUND DRAIN

SPEED LIMIT 45

1.7%

DRAINAGE CANAL

Logo in clear zone

20'

10'

2:1

3:1

1' Shoulders

500 SOUTH

2:1

1' Shoulders

27' Shoulders

1.7%

SPEED LIMIT 45

NO PARKING 10-00 PM

1300 West

FIRE HYDRANT

1453 West

1301 West

FIGURE A-8 SR-68 Existing Conditions

Legend

- 6' Shoulder Width
- 6' Median Width
- Existing Barrier/Guardrail
- Obstructions or slopes 3:1 or steeper
- Crash History
- Road Cross Slope/ Superelevation
- Curb and Gutter
- Edge of Asphalt

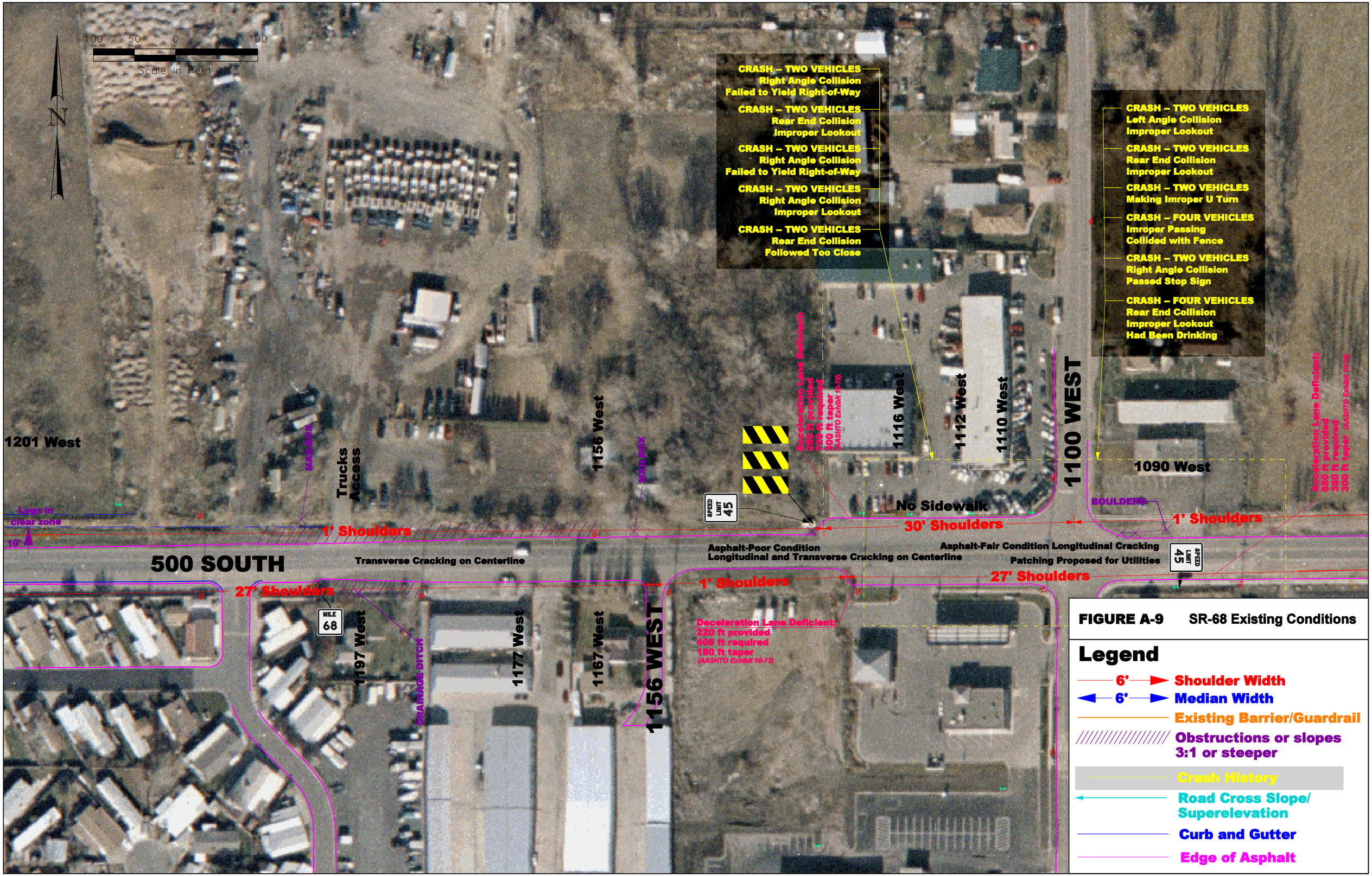
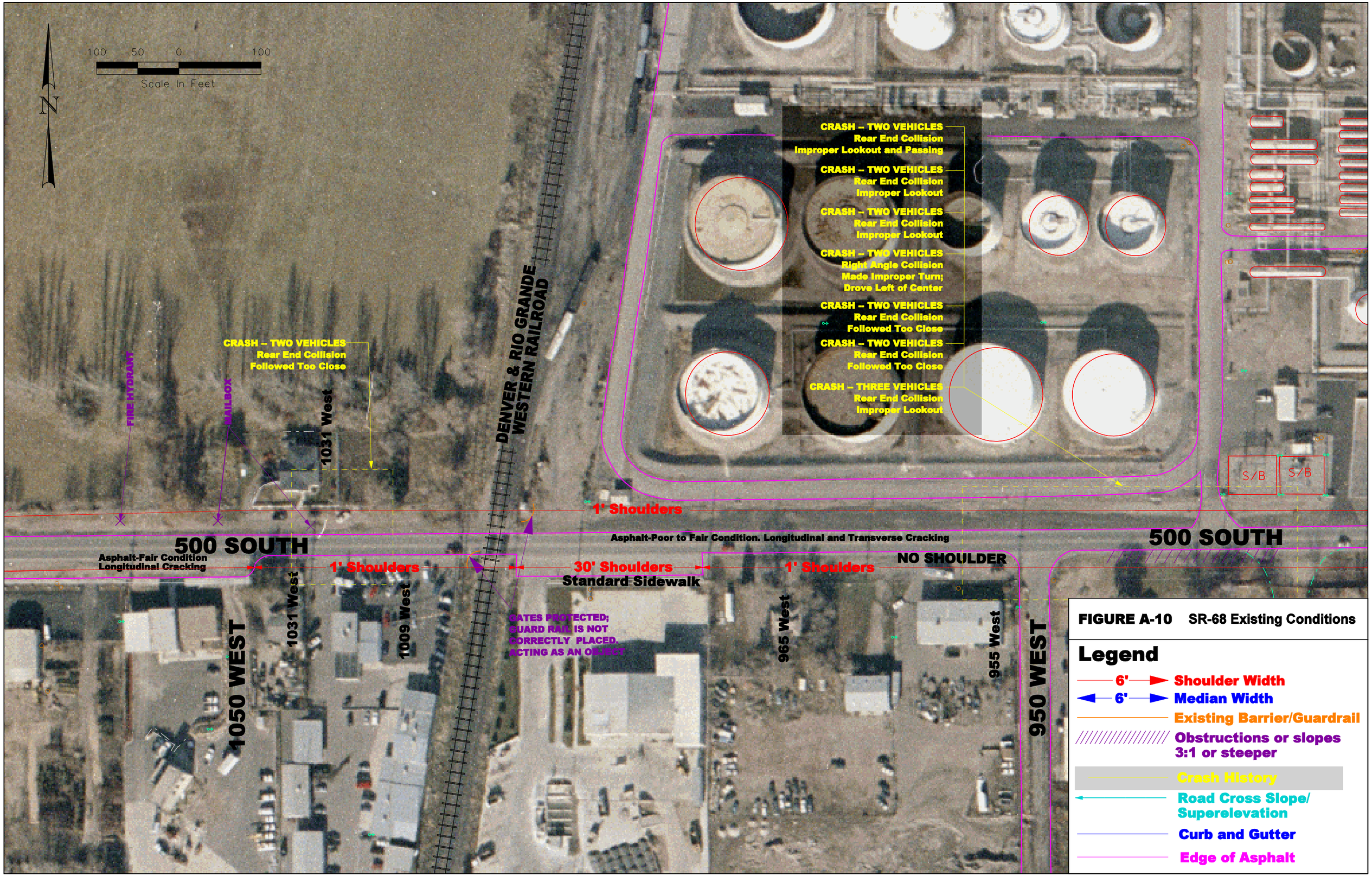


FIGURE A-9 SR-68 Existing Conditions

Legend

- 6' Shoulder Width
- 6' Median Width
- Existing Barrier/Guardrail
- Obstructions or slopes 3:1 or steeper
- Crash History
- Road Cross Slope/ Superelevation
- Curb and Gutter
- Edge of Asphalt


100 50 0 100
Scale In Feet
N
CRASH – TWO VEHICLES
Rear End Collision
Improper Lookout and Passing
CRASH – TWO VEHICLES
Rear End Collision
Improper Lookout
CRASH – TWO VEHICLES
Rear End Collision
Improper Lookout
CRASH – TWO VEHICLES
Right Angle Collision
Made Improper Turn;
Drove Left of Center
CRASH – TWO VEHICLES
Rear End Collision
Followed Too Close
CRASH – TWO VEHICLES
Rear End Collision
Followed Too Close
CRASH – THREE VEHICLES
Rear End Collision
Improper Lookout
CRASH – TWO VEHICLES
Rear End Collision
Followed Too Close
FIRE HYDRANT
MAILBOX
1031 West
DENVER & RIO GRANDE
WESTERN RAILROAD
S/B
S/B
1' Shoulders
Asphalt-Poor to Fair Condition. Longitudinal and Transverse Cracking
500 SOUTH
500 SOUTH
Asphalt-Fair Condition
Longitudinal Cracking
1' Shoulders
30' Shoulders
Standard Sidewalk
1' Shoulders
NO SHOULDER
1050 WEST
1031 West
1009 West
965 West
955 West
950 WEST
GATES PROTECTED;
GUARD RAIL IS NOT
CORRECTLY PLACED.
ACTING AS AN OBJECT
FIGURE A-10 SR-68 Existing Conditions
Legend
6' Shoulder Width
6' Median Width
Existing Barrier/Guardrail
Obstructions or slopes
3:1 or steeper
Crash History
Road Cross Slope/
Superelevation
Curb and Gutter
Edge of Asphalt

100 50 0 100

Scale In Feet

N

CRASH – TWO VEHICLES
Right Angle Collision
Failed to Yield Right-of-Way
Improper Lookout

CRASH – TWO VEHICLES
Right Angle Collision
Hit and Run

CRASH – TWO VEHICLES
Right Angle Collision
Failed to Yield Right-of-Way

CRASH – TWO VEHICLES
Left Turn Collision
Failed to Yield Right-of-Way

CRASH – TWO VEHICLES
Right Angle Collision
Failed to Yield Right-of-Way

CRASH – TWO VEHICLES
Left Turn Collision
Failed to Yield Right-of-Way

CRASH – TWO VEHICLES
Right Angle Collision
Speed Too Fast;
Collided with Island

CRASH – TWO VEHICLES
Right Angle Collision
Failed to Yield Right-of-Way;
Collided with Sign Post

CRASH – TWO VEHICLES
Rear End Collision
Driver Distracted
Collided with Mailbox or
Fire Hydrant

CRASH – TWO VEHICLES
Rear End Collision
Improper Lookout

CRASH – TWO VEHICLES
Right Angle Collision
Failed To Yield Right-of-Way

CRASH – TWO VEHICLES
Rear End Collision
Followed Too Close

CRASH – TWO VEHICLES
Lane Change Collision
Aggressive Driving

CRASH – TWO VEHICLES
Side Swipe Collision
Improper Passing

CRASH – TWO VEHICLES
Making U Turn Failed to Yield
Right-of-Way

CRASH – TWO VEHICLES
Right Angle Collision Failed to Yield
Right-of-Way

PIPING TUNNEL

FIRE WATER

800 WEST

UNION PACIFIC RAILROAD

Pavement fair - Rutted by rail road

772 West

756 West

746 West Residence

730 West

SPEED LIMIT 35

Acceleration Lane Deficient:
None provided
360 ft required
300 ft taper
(AASHTO Exhibit 10-70)

NO STOPPING OR STANDING ANY TIME

1.5%

2' Shoulders

Standard Sidewalk

1' Shoulders

0' - 14' Median

Asphalt-Fair Condition
Longitudinal and Transverse Cracking

14' Median

Asphalt-Fair Condition. Longitudinal and Transverse Cracking, Some Settlement

Asphalt-Poor Condition, Showing Signs of Shifting

Standard Sidewalk

Standard Sidewalk

1' Shoulders

6' Shoulders

3' Shoulders

2.1%

LOGS IN CLEAR ZONE

MAILBOX

500 SOUTH

900 WEST

875 WEST

841 West

840 WEST

829 West

Deceleration Lane Deficient:
None provided
265 ft required
100 ft taper
(AASHTO Exhibit 10-71)

Utah Power Substation

S/B

S/B

S/B

GASOLINE P/L

GASOLINE P/L

DO NOT STOP ON TRACKS

DO NOT BLOCK INTERSECTION

FIGURE A-11 SR-68 Existing Conditions

Legend

- 6' Shoulder Width
- 6' Median Width
- Existing Barrier/Guardrail
- Obstructions or slopes 3:1 or steeper
- Crash History
- Road Cross Slope/ Superelevation
- Curb and Gutter
- Edge of Asphalt

100 50 0 100

Scale In Feet

N

746 West Residence

730 West

860 West

END PROJECT R.P. 69.13

I-15

7' Shoulders

Standard Sidewalk

14' Shoulders

14' Median

8' - 14' Median

500 SOUTH

3' Shoulders

735 West

715 West

700 WEST

Standard Sidewalk

2' Shoulders

Pavement-Good Condition

Concrete lined Retension Basin

I-15

CRASH – VEHICLE, BICYCLE

CRASH – TWO VEHICLES
Rear EndCollision
Improper Lookout

CRASH – TWO VEHICLES
Improper Turn Collision
Collided with Utility Pole

CRASH – THREE VEHICLES
Rear End Collision
Followed Too Close
Speed too Fast

CRASH – TWO VEHICLES
Rear End Collision
Followed Too Close

CRASH – TWO VEHICLES
Right Agle Collision
Failed to Yield Right-of-Way

CRASH – THREE VEHICLES
Rear End Collision
Improper Lookout

CRASH – TWO VEHICLES
Right Agle Collision
Improper Lookout

CRASH – TWO VEHICLES
Right Agle Collision
Failed to Yield Right-of-Way

CRASH – TWO VEHICLES
Rear EndCollision
Improper Lookout

CRASH – FOUR VEHICLES
Rear EndCollision
Followed Too Close

CRASH – TWO VEHICLES
Left Turn Collision
Failed To Yield Right-of-Way
Rollover Collided with Traffic Channel

CRASH – TWO VEHICLES
Right Angle Collision
Failed To Yield Right-of-Way
Disregard Traffic Signal

CRASH – TWO VEHICLES
Left Turn Collision
Failed To Yield Right-of-Way

CRASH – TWO VEHICLES
Left Turn Collision
Failed To Yield Right-of-Way

CRASH – TWO VEHICLES
Left Turn Collision
Failed To Yield Right-of-Way

CRASH – TWO VEHICLES
Rear End Collision
Agressive Driving

CRASH – TWO VEHICLES
Rear End Collision
Improper Lookout

CRASH – TWO VEHICLES
Rear End Collision
Improper Lookout

CRASH – TWO VEHICLES
Rear EndCollision
Improper Lookout

CRASH – TWO VEHICLES
Rear EndCollision
Improper Lookout

FIGURE A-12 SR-68 Existing Conditions

Legend

- 6' Shoulder Width
- 6' Median Width
- Existing Barrier/Guardrail
- Obstructions or slopes 3:1 or steeper
- Crash History
- Road Cross Slope/ Superelevation
- Curb and Gutter
- Edge of Asphalt

100 50 0 100

Scale In Feet

2425 South

2600 SOUTH

BEGIN
PROJECT
R.P. 65.71

FIGURE B-1: SR-68 EXISTING UTILITIES

Legend

- e — Electrical
- ir — irrigation
- wtr — Water Line
- petro — Petroleum Line
- g — Gas Line
- swr — Sewer Line
- tel — Qwest lines

FIGURE B-2: SR-68 EXISTING UTILITIES

Legend

- e — Electrical
- ir — Irrigation
- wtr — Water Line
- petro — Petroleum Line
- g — Gas Line
- swr — Sewer Line
- tel — Qwest lines

FIGURE B-3: SR-68 EXISTING UTILITIES

Legend

- e — Electrical
- ir — Irrigation
- wtr — Water Line
- petro — Petroleum Line
- g — Gas Line
- swr — Sewer Line
- tel — Qwest lines

SR-68 (REDWOOD ROAD)

1500 SOUTH

FIGURE B-4: SR-68 EXISTING UTILITIES

Legend

- e — Electrical
- ir — Irrigation
- wtr — Water Line
- petro — Petroleum Line
- g — Gas Line
- swr — Sewer Line
- tel — Qwest lines

FIGURE B-5: SR-68 EXISTING UTILITIES

Legend

- e — Electrical
- ir — Irrigation
- wtr — Water Line
- petro — Petroleum Line
- g — Gas Line
- swr — Sewer Line
- tel — Qwest lines

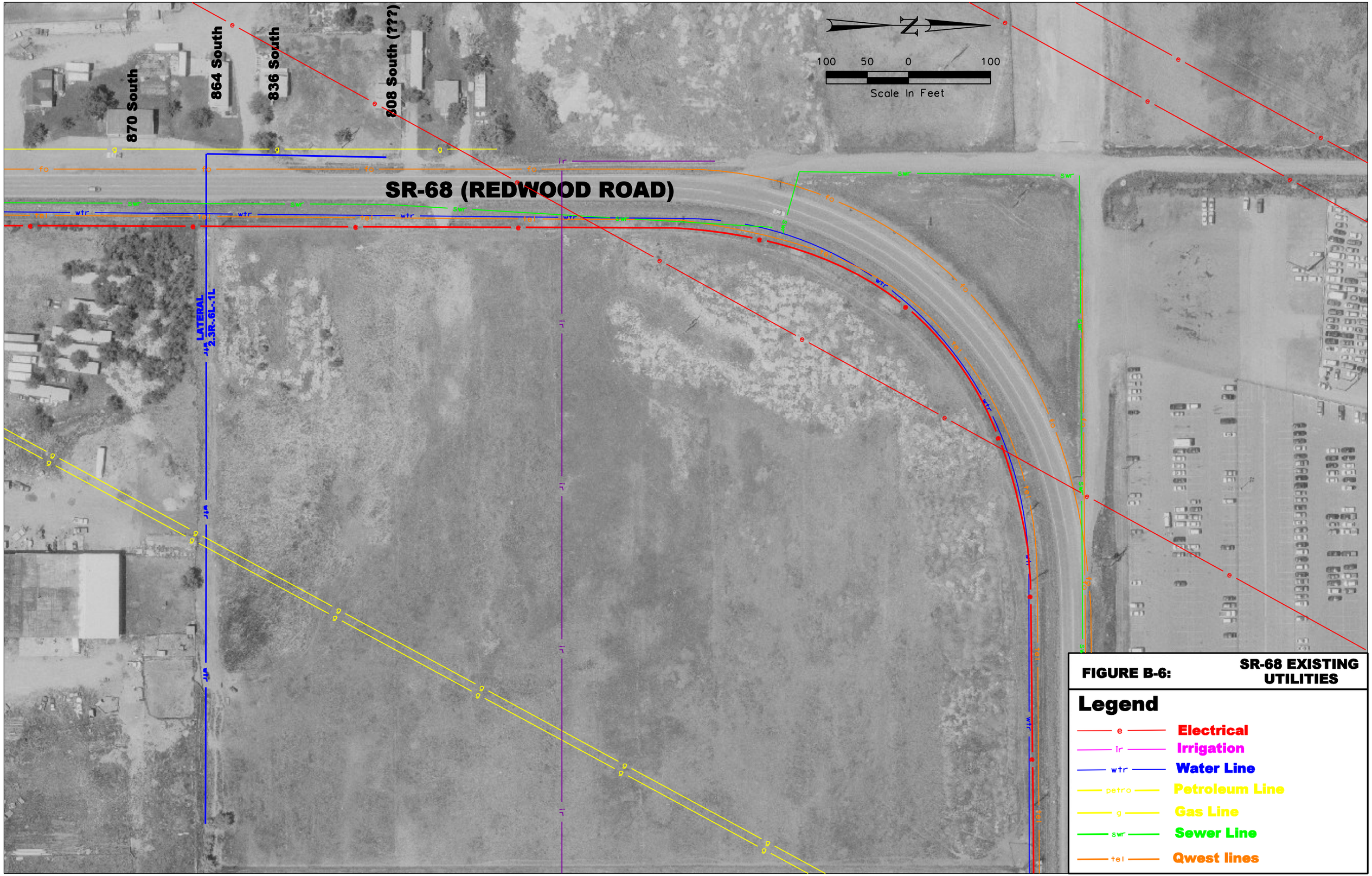

870 South
864 South
836 South
808 South (???)
SR-68 (REDWOOD ROAD)
LATERAL
2.3R-6L-1L
100 50 0 100
Scale In Feet
FIGURE B-6:
SR-68 EXISTING UTILITIES
Legend
e Electrical
ir Irrigation
wtr Water Line
petro Petroleum Line
g Gas Line
swr Sewer Line
tel Qwest lines

FIGURE B-7: SR-68 EXISTING UTILITIES

Legend

- e — Electrical
- ir — Irrigation
- wtr — Water Line
- petro — Petroleum Line
- g — Gas Line
- swr — Sewer Line
- tel — Qwest lines

N

100 50 0 100

Scale In Feet

1500 West

1201 West

500 SOUTH

1453 West

1301 West

1300 West

WESTWOOD MOBILE HOME COMMUNITY

FIGURE B-8: SR-68 EXISTING UTILITIES

Legend

- e — Electrical
- ir — Irrigation
- wtr — Water Line
- petro — Petroleum Line
- g — Gas Line
- swr — Sewer Line
- tel — Qwest lines

100 50 0 100

Scale In Feet

N

1156 West

1116 West

1112 West

1110 West

1100 WEST

1090 West

500 SOUTH

1197 West

1177 West

1167 West

1156 WEST

irrigation pump house

WESTWOOD MOBILE HOME COMMUNITY

FIGURE B-9: SR-68 EXISTING UTILITIES

Legend

- e — Electrical
- ir — Irrigation
- wtr — Water Line
- petro — Petroleum Line
- g — Gas Line
- swr — Sewer Line
- tel — Qwest lines

N

100 50 0 100

Scale In Feet

500 SOUTH

1031 West

1055 West

1050 WEST

1031 West

1009 West

955 West

950 WEST

GASOLINE PIPE

GASOLINE PIPE

CRUDE PIPE

CRUDE PIPE

FIGURE B-10: SR-68 EXISTING UTILITIES

Legend

- e — Elctrical
- ir — Irrigation
- wtr — Water Line
- petro — Petroleum Line
- g — Gas Line
- swr — Sewer Line
- tel — Qwest lines

N

100 50 0 100

Scale In Feet

GASOLINE PIT

GASOLINE PIT

PIPING TUNNEL

FIRE WATER

800 WEST

772 West

756 West

746 West Residence

730 West

735 West

500 SOUTH

900 WEST

875 WEST

841 West

840 WEST

829 West

Electrical Substation

GAS PIPE

FIGURE B-11 — **SR-68 EXISTING UTILITIES**

Legend

- e — Electrical
- ir — Irrigation
- wtr — Water Line
- petro — Petroleum Line
- g — Gas Line
- swr — Sewer Line
- tel — Qwest lines

N

END
PROJECT
R.P. 69.13

500 SOUTH

700 WEST

746 West
Residence

730 West

735 West

715 West

860 West

FIGURE B-12

SR-68 EXISTING UTILITIES

Legend

- e — Electrical
- ir — Irrigation
- wtr — Water Line
- petro — Petroleum Line
- g — Gas Line
- swr — Sewer Line
- tel — Qwest lines

CRITICAL ELEMENT	AASHTO	UDOT	SR-68	Comments	AASHTO Ref.	UDOT Ref.
Functional Classification						
	Urban Principal Arterial	Urban Principal Arterial	**Urban Principal Arterial**		p. 11	Std. Dwg. GW 11: Note 1
LOS						
Urban Arterial	C	C	**C**	Min. LOS=D	p. 84, 85; Exhibit 2-32 & p. 470	Std. Dwg. DD 11: Note 1
Design Vehicle						
Mainline	BUS-40 - WB-109D	WB-62	**WB-62**		p. 18 & p. 42	Utah Reg. for Legal and Perm. Veh.
Minor Intersections	WB-40 - WB-50	WB-40 - WB-50	**WB-40**		p. 43	Utah Reg. for Legal and Perm. Veh.
Heavy Industrial Driveways	BUS-40 - WB-109D	BUS-40 - WB-62	**WB-67**		p. 18 & p. 42	Utah Reg. for Legal and Perm. Veh.
Design Speed (mph)						
R.P. 65.7-67.0	30 - 60	30 - 60	**60**	Posted speed is 55 mph	p. 470	Std. Dwg. DD 11: Note 1
R.P. 67.0 - 1100 West	30 - 60	30 - 60	**50**	Posted speed is 45 mph	p. 470	Std. Dwg. DD 11: Note 1
1100 West - I-15	30 - 60	30 - 60	**40**	Posted speed is 35 mph	p. 470	Std. Dwg. DD 11: Note 1
Lane Widths (ft)						
Thru Lane	12	12	**12**		p. 472 & p. 473	Std. Dwg. DD 11: Note 1
Turn Lane/Median	4 - 18	14	**14**		p. 474	Std. Dwg. ST 5
Shoulder Widths (ft)						
2-Lane Hwy	4	4	**4**		Exhibit 7-3, p. 448	Std. Dwg. DD 11: Note 1
Multi-Lane Hwy	8	8	**8**		p. 455	Std. Dwg. GW 11
Minimum shoulder	2 + 2	2 + 2	**2 + 2**	2' Paved, 2' Base	p. 448	Std. Dwg. DD 12: Note 1
Horizontal Alignment						
R_{min}	Exhibit 3 - 26	AASHTO Exhibit 3 - 26	**Exhibit 3 - 26**	Assume 6% max	p.168	Std. Dwg. DD 11: Note 1
HSO (Horizontal Sight Offset)	Exhibit 3 - 53	AASHTO Exhibit 3 - 53	**Exhibit 3 - 53**		p. 226	Std. Dwg. DD 11: Note 1
Vertical Alignment						
Crest	Exhibit 3 - 71	AASHTO Exhibit 3 - 71	**AASHTO Exhibit 3 - 71**		p. 271	Std. Dwg. DD 11: Note 1
Sag	Exhibit 3 - 74	AASHTO Exhibit 3 - 74	**AASHTO Exhibit 3 - 74**		p. 275	Std. Dwg. DD 11: Note 1
Grades						
Minimum	0.5%	0.3%	**0.5%**		p. 242	Std. Dwg. DD 12: Note 9
Maximum	Exhibit 7-10	AASHTO Exhibit 7-10	**AASHTO Exhibit 7-10**		p. 472	Std. Dwg. DD 11: Note 1
Sight Distance						
Stopping Sight Distance	Exhibit 7-1	AASHTO Exhibit 7-1	**AASHTO Exhibit 7-1**		p. 445	Std. Dwg. DD 11: Note 1
Passing Sight Distance	Exhibit 7-1	AASHTO Exhibit 7-1	**AASHTO Exhibit 7-1**		p. 445, p. 449	Std. Dwg. DD 11: Note 1
Intersection Sight Distance	Ex. 9-51, 55, 58, 61, 64, 67, 70	Ex. 9-51, 55, 58, 61, 64, 67, 70	**Ex. 9-51, 55, 58, 61, 64, 67, 70**		p. 650-682	Std. Dwg. DD 11: Note 1
Cross Section						
Cross Slope	1.5% - 2%	2%	**2%**		p. 143, 450 & 459	Std. Dwg. DD 11
Clear Zone	Table 3.1	Roadside Design Guide Table 3.1	**Roadside Design Guide Table 3.1**		RDG p 3-6 Table 3.1	Std. Dwg. DD 11: Note 2
Sideslopes	2:1 - 10:1	2:1 - 6:1	2:1 - 6:1		RDG Chapter 3	Std. Dwg. DD 11
Superelevation						
Maximum Rate	Exhibit 3 - 26	AASHTO Exhibit 3 - 26	**Exhibit 3 - 26**	Assume 6% max	p.168	Std. Dwg. DD 11: Note 1
Runoff Rate	Exhibit 3 - 32	AASHTO Exhibit 3 - 32	**Exhibit 3 - 26**	Assume 6% max	p.178 & 181	Std. Dwg. DD 11: Note 1
Speed Change Lanes						
Accel. Lanes	Exhibit 10-70	AASHTO Exhibit 10-70	**AASHTO Exhibit 10-70**		p.688-689, 847	Std. Dwg. DD 11: Note 1
Decel. Lanes	Exhibit 10-73	AASHTO Exhibit 10-73	**AASHTO Exhibit 10-73**		p.688-689, 851	Std. Dwg. DD 11: Note 1
Structural Capacity						
	HS - 20	HS - 20	**HS - 20**		p. 447	Std. Dwg. DD 11: Note 1
Vertical Clearance						
Roadway	16'-0"	17'-0"	**17'-0"**		p. 472	Std Dwg DD8
Railroad	-	23'-6"	**23'-6"**		-	Std. Dwg. DD 10
Bridge Width						
	Roadway Width	Roadway Width + 4'	**Roadway Width + 4'**		p. 481	Std. Dwg. DD 9
AASHTO Ref = Geometric Design of Highways and Streets, 2004 Edition						
RDG = AASHTO Roadside Design Guide, 2002 Edition						

FIGURE C1

Horizontal Curve Sight Distance Check

DRAFT

Bold = Design Standard Criteria Not Achieved

Alignment	Curve No.	Direction	Approx. Mile Post	PI Station	Design Speed	Radius	Min. Radius	Superelevation		Sight Distance		Radius - Lane at Inside of Curve	Horizontal Sightline Offset		Restrictive Sight Distance Feature	Comments
								Required	Provided	Required	Provided		Provided	Required		
					MPH	FT	FT	%	%	FT	FT	FT	FT	FT		
SR-68	1	Left	65.77	15+69.677	60	12000	12000	-2.0%	-2.0%	570	570 +	11980	30.00 +	0.243	None	Existing alignment
SR-68	2	Right	65.98	27+14.696	60	12000	12000	-2.0%	-2.0%	570	570 +	11994	44.00 +	0.066	None	Existing alignment
SR-68	3	Right	66.14	35+69.860	60	12000	12000	-2.0%	-2.0%	570	570 +	11994	44.00 +	0.007	None	Existing alignment
SR-68	4	Left	66.50	54+22.194	60	12000	12000	-2.0%	-2.0%	570	570 +	11994	44.00 +	0.001	None	Existing alignment
SR-68	5	Right	66.71	65+49.269	60	12000	12000	-2.0%	-2.0%	570	570 +	11994	44.00 +	0.025	None	Existing alignment
SR-68	6	Right	66.82	71+17.231	50	8000	8000	-2.0%	-2.0%	425	425 +	7994	44.00 +	0.045	None	Existing alignment
SR-68	7	Left	67.03	82+22.878	50	8000	8000	-2.0%	-2.0%	425	425 +	7994	44.00 +	0.012	None	Existing alignment
SR-68	8	Right	67.26	94+52.369	50	**500**	3480	3.0%	3.0%	425	425 +	494	45.011 +	44.487	None	Existing alignment; emax = 6%
SR-68	9	Left	67.47	105+44.575	50	8000	8000	-2.0%	-2.0%	425	425 +	7994	44.00 +	0.025	None	Existing alignment
SR-68	10	Right	67.81	123+57.113	50	8000	8000	-2.0%	-2.0%	425	425 +	7994	44.00 +	0.004	None	Existing alignment
SR-68	11	Left	67.99	133+01.075	50	8000	8000	-2.0%	-2.0%	425	425 +	7994	35.01	0.018	None	Existing alignment
SR-68	12	Right	68.24	146+32.622	40	6000	6000	-2.0%	-2.0%	305	305 +	5994	44.00 +	0.019	None	Existing alignment
SR-68	13	Left	68.47	158+75.397	40	6000	6000	-2.0%	-2.0%	305	305 +	5994	44.00 +	0.010	None	Existing alignment
SR-68	14	Right	68.78	174+86.101	40	6000	6000	-2.0%	-2.0%	305	305 +	5980	30.00 +	0.157	None	Existing alignment

FIGURE C2

Vertical Curve Criterial Check

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Bold = Design Standard Criteria not Achieved

Alignment	Vertical Curve No.	Approx. Mile Post	PVI Station	Design Speed	Grade				Vert. Curve Type	K-Value		Length	Comments
					Max. Req'd.	Min. Req'd.	In Prov'd.	Out Prov'd.		Min. Req'd.	Prov'd.		
				mph	%	%	%	%					
SR-68	1	66.37	47+80.00	60	6.00%	0.30%	**0.03%**	**-0.38%**	Crest	151	730	300	Existing alignment
SR-68	2	66.55	57+00.00	60	6.00%	0.30%	**-0.38%**	**-0.18%**	Sag	136	1242	250	Existing alignment
SR-68	3	67.06	84+00.00	50	6.00%	0.30%	**0.18%**	**0.11%**	Sag	96	516	150	Existing alignment
SR-68	4	67.49	107+00.00	50	6.00%	0.30%	**0.11%**	**0.48%**	Sag	96	2181	800	Existing alignment
SR-68	5	67.92	129+60.00	50	6.00%	0.30%	**0.48%**	**0.34%**	Crest	84	7199	1000	Existing alignment
SR-68	6	68.21	144+60.00	40	6.00%	0.30%	**0.34%**	2.91%	Sag	64	195	500	Existing alignment
SR-68	7	68.32	150+80.00	40	6.00%	0.30%	2.91%	0.74%	Crest	44	92	200	Existing alignment
SR-68	8	68.43	156+20.00	40	6.00%	0.30%	0.74%	1.41%	Sag	64	1129	750	Existing alignment
SR-68	9	68.62	166+40.00	40	6.00%	0.30%	1.41%	2.76%	Sag	64	370	500	Existing alignment
SR-68	10	68.70	170+40.00	40	6.00%	0.30%	2.76%	1.43%	Crest	44	150	200	Existing alignment

FIGURE C3

Cross Section Element Check

DRAFT

Bold = Design Standard Criteria not Achieved

Alignment	Beginning Station	Ending Station	Design Speed	Lane Width		Clear Zone		Southbound/Westbound						Northbound/Eastbound					
				Req'd	Prov'd	Req'd	Prov'd	No. of Lanes	Side Slope	Shoulder Req'd	Shoulder Prov'd	Barrier Req'd	Barrier Prov'd	No. of Lanes	Side Slope	Shoulder Req'd	Shoulder Prov'd	Barrier Req'd	Barrier Prov'd
			mph	ft	ft	ft	ft		ft:ft	ft	ft				ft:ft	ft	ft		
SR-68	12+77	80+88	60	12	12	30	30*	1	6:1*	8	**1**	*	None	1	6:1*	8	**1**	*	None
SR-68	80+88	142+77	50	12	12	20	20*	1	6:1*	8	**1-30**	*	None	1	6:1*	8	**1-24**	*	None
SR-68	142+77	182+00	40	12	12	16	16**	1	6:1	8	**1-14**	*	None	1	6:1	8	**1-24**	*	None

* Typical clear zone provided is sufficient; however, there are various hazards inside the clear zone that need barrier or end treatments.
** For urban arterials, collectors, and local streets where space is restricted, a min. distance of 18 inches should be provided from the curb face to object.

FIGURE C4

100 50 0 100

Scale In Feet

24" Storm

2425 South

18" Storm Drain

sd

sd

sd

18" Storm Drain

wtr

wtr

wtr

wtr

wtr

BEGIN
PROJECT
R.P. 65.71

sd

15 " Storm Drain

sd

sd

24" Storm Drain

sd

wtr

sd

24" Storm Drain

SR-68

FIGURE D-1

SR-68 EXISTING DRAINAGE

Legend

- Canal
- sd — Storm Drain
- Roadway Ditch

2425 South

24" Storm Drain

sd sd sd sd sd

SR-68 (REDWOOD ROAD)

Standing Water

24" Storm Drain

sd sd sd

24

2415 South

2255 South

2125 South

100 50 0 100

Scale In Feet

FIGURE D-2

SR-68 EXISTING DRAINAGE

Legend

Canal

sd Storm Drain

Roadway Ditch


100 50 0 100
Scale In Feet
2018 South
2020 South
Standing Water
24" Storm Drain
15" Storm Drain
sd
wtr
SR-68 (REDWOOD ROAD)
Metal Corrogated Pipe
35 c.f.s.
Irrigation Line
Pond with pondlife
for landscaping purposes
Businesses drain towards
right-of-way
8" Water Pipe
2125 South
1753 South
1751 South
FIGURE D-3
SR-68 EXISTING DRAINAGE
Legend
Canal
Storm Drain
Roadway Ditch

FIGURE D-4 — **SR-68 EXISTING DRAINAGE**

Legend

- Canal
- sd — Storm Drain
- Roadway Ditch

FIGURE D-5 — **SR-68 EXISTING DRAINAGE**

Legend

- Canal
- sd — Storm Drain
- Roadway Ditch

FIGURE D-6

SR-68 EXISTING DRAINAGE

Legend

- Canal
- sd — Storm Drain
- Roadway Ditch

FIGURE D-7

SR-68 EXISTING DRAINAGE

Legend

- Canal
- Storm Drain
- Roadway Ditch

N

100 50 0 100

Scale In Feet

36" CMP Pipe
30 c.f.s.

Both open ditches
flow into the A1-A Drain.

Two pipes flow into pond
from natural spring

ir

wtr

500 SOUTH

12 " CMP

Irrigation Line

FIGURE D-8 — **SR-68 EXISTING DRAINAGE**

Legend

- Canal
- sd — Storm Drain
- Roadway Ditch

N

100 50 0 100

Scale In Feet

1201 West

1156 West

1116 West

1112 West

1110 West

1100 WEST

1090 West

Standing water in front of America's Country Store

Concrete valley gutter

Deep open ditch

Storm drain outlets into open ditch

sd 48" CMP

48" CMP

48" CMP

sd 48" CMP

48" CMP

48" CMP

Squash CMP

36" Storm Drain

Inlet with solid cover

48" CMP

Inlet double

36" RCP

sd

12" RCP

43"x23" Squash RCP

ps 18" Storm Drain

ps

500 SOUTH

1197 West

1177 West

1167 West

Hole and plugged concrete pipe

Water erosion under curb

36" Storm Drain

sd

WESTWOOD MOBILE HOME COMMUNITY

Drains to an open field

1295 0

FIGURE D-9

SR-68 EXISTING DRAINAGE

Legend

- Canal
- sd — Storm Drain
- Roadway Ditch

N

100 50 0 100

Scale In Feet

1031 West

Water erosion along shoulder

42" grate inlet

24" RCP

36" RCP

sd

ir

Double grate inlet

24" RCP

30" RCP

Inlet

24" RCP

48" CMP

18" RCP

48" CMP

Double inlets

30" RCP

500 SOUTH

wtr

ps

1055 West

1031 West

1009 West

955 West

Small grate inlet not UDOT std.

Drainage sump area

Inlet

Outlet closed. Every time it rains the storm drain manhole overflows (approx. 139+60).

FIGURE D-10 **SR-68 EXISTING DRAINAGE**

Legend

- Canal
- Storm Drain
- Roadway Ditch

100 50 0 100

Scale In Feet

N

800 WEST

772 West

756 West

746 West

730 West

735 West

841 West

829 West

500 SOUTH

No curb and gutter

Double inlet

30" RCP

sd

18" RCP inside 48" CMP

Grate and SDMH in sidewalk

Abandoned 5'x4' box

Solid covers

8'x4' Box Culvert

FIGURE D-11 **SR-68 EXISTING DRAINAGE**

Legend

- Canal
- sd — Storm Drain
- Roadway Ditch

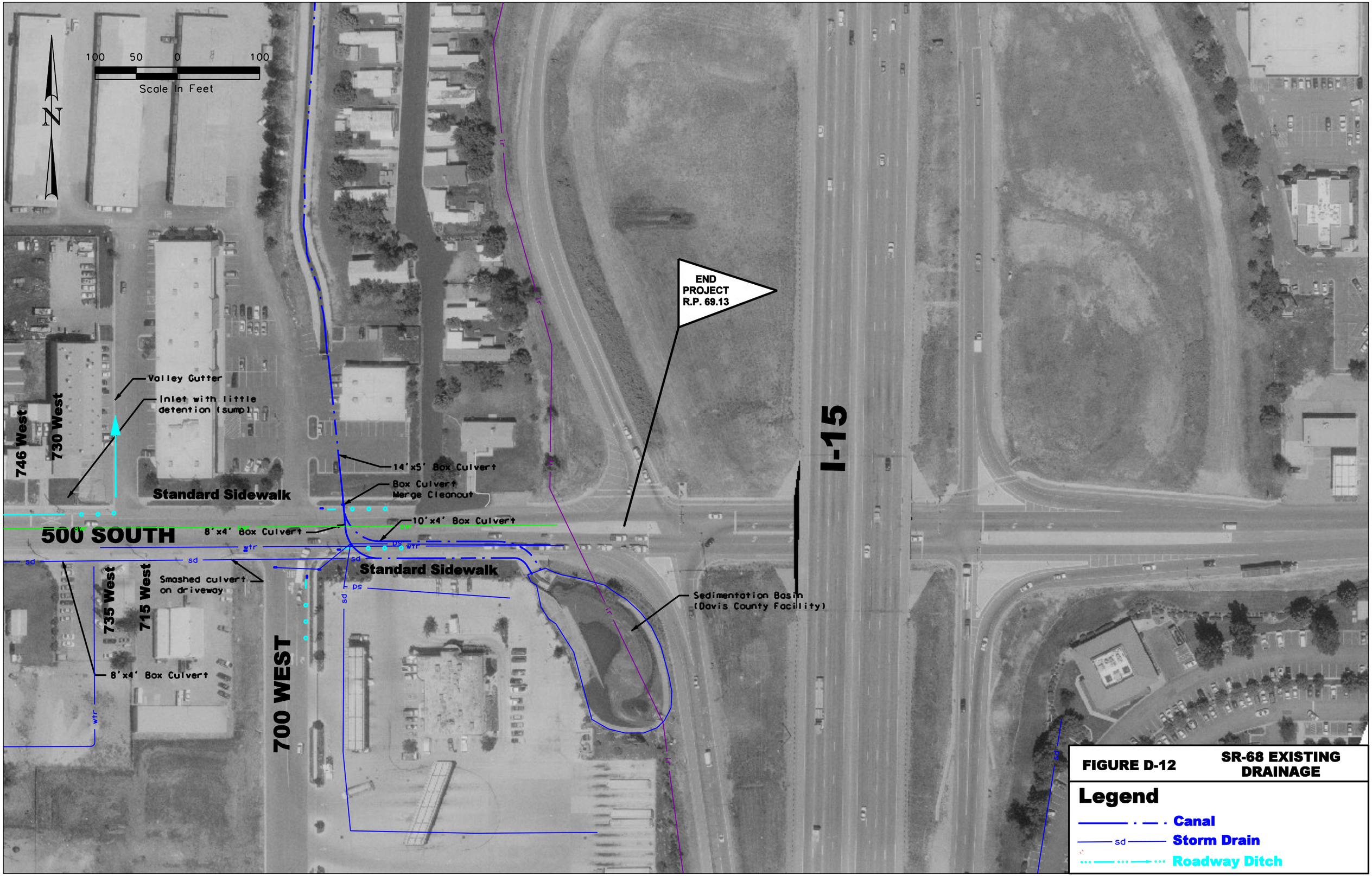

FIGURE D-12 **SR-68 EXISTING DRAINAGE**

Legend

- Canal
- sd — Storm Drain
- Roadway Ditch

SR-68 2600 South to I-15 in Davis County

SR-68, 500 South Existing Conditions Technical Memorandum

UDOT CONNECTING COMMUNITIES